

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

ROHINI KUMAR, an individual, on behalf of  
herself, the general public and those similarly  
situated,

Plaintiff,

Case No. 4:14-cv-02411-YGR

v.

SALOV NORTH AMERICA CORP.; and  
ITALFOODS, INC.,

Defendants.

Declaration

of

**COLIN B. WEIR**

January 19, 2016

REFERENCES MATERIALS DESIGNATED "CONFIDENTIAL" AND "CONFIDENTIAL  
ATTORNEYS' EYES ONLY" UNDER PROTECTIVE ORDER

I, Colin B. Weir, declare as follows:

I am Vice President at Economics and Technology, Inc. ("ETI"), One Washington Mall, 15th Floor, Boston, Massachusetts 02108. ETI is a research and consulting firm specializing in economics, statistics, regulation and public policy.

## **I. QUALIFICATIONS, BACKGROUND, AND EXPERIENCE**

1. I hold a Masters of Business Administration, with honors, from the High Technology program at Northeastern University, Boston, Massachusetts. I hold a Bachelor of Arts degree cum laude in Business Economics from The College of Wooster, Wooster, Ohio. I have provided expert testimony before federal and state courts, the Federal Communications Commission, and state regulatory commissions, and have contributed research and analysis to numerous ETI publications and expert testimony at the state, federal, and international levels. I have consulted on a variety of consumer and wholesale products cases, calculating damages relating to food products, household appliances, herbal remedies, health/beauty care products, electronics, and computers. My Statement of Qualifications, which outlines my professional experience, publications, and record of expert testimony, is attached hereto as Exhibit 1. This includes a list of all cases in which, during the previous four years, I have testified as an expert at trial or by deposition. Prior to joining ETI, I worked at Stop and Shop Supermarkets for a period of seven years, working as a cash department head, grocery/receiving clerk, and price-file maintenance head.

## **II. ENGAGEMENT**

2. I provide this declaration in connection with the case filed by Plaintiff Rohini Kumar ("Plaintiff") in the above-captioned action against Defendant Salov North America Corp. ("Defendant" or "Salov"). I make this declaration based upon my own personal knowledge and,

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if called as a witness in this action, I would be able to competently testify as to the facts and opinions set forth herein.

3. I have been advised by Counsel for Plaintiff that individuals purchased certain Salov brand Products<sup>1</sup> which were labeled as being "Imported From Italy" ("the Claim").<sup>2</sup> I have been further advised that Plaintiff alleges that this Claim is false or misleading to reasonable consumers and therefore should not have been made. I have been asked by Counsel for Plaintiff to determine whether it would be possible to determine damages on a class-wide basis using common evidence, and if so, to provide a framework for the calculation of, and a preliminary estimate of damages suffered by the proposed class of plaintiffs<sup>3</sup> as a result of the allegedly false and misleading Claim.

4. ETI is being compensated by a flat fee of \$63,000.00 for work on this report,<sup>4</sup> and at the rate of \$600 per hour for my additional work on this case. The opinions expressed in this declaration are my own, and my compensation is not dependent upon the substance of these opinions or the outcome of the litigation.

5. The documents, data and other materials that I relied upon in forming my opinions are identified throughout my report and in Exhibit 2, attached hereto. In addition, I have relied upon my educational background and more than 12 years of experience.

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<sup>1</sup> "The Products."

<sup>2</sup> *See, generally*, Class Action Complaint, filed May 22, 2014 ("Complaint").

<sup>3</sup> I understand from Counsel for Plaintiff that the proposed class (the "Class") is as follows: All purchasers in California of liquid Filippo Berio Robusto Extra Virgin Olive Oil, Filippo Berio Extra Virgin Olive Oil, Filippo Berio Delicato Extra Virgin Olive Oil, Filippo Beiro Olive Oil (also known as Filippo Berio Pure Olive Oil), and Filippo Berio Extra Light Olive Oil, between May 23, 2010 and August 31, 2015.

<sup>4</sup> This fixed fee includes the production of two other declarations.

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### III. THE ALLEGED MISREPRESENTATION

6. Plaintiff's allegations center on the labeling of the Products as being "Imported from Italy."<sup>5</sup> Plaintiff alleges that this Claim is misleading and deceptive.

7. In economics, the concept of product differentiation can be summarized as the introduction of product attributes that allows the consumer to differentiate between otherwise similar products, with the goal of increasing sales and profits.<sup>6</sup>

8. Numerous academic studies have analyzed consumer preferences and market outcomes for olive oils and many have specifically found the premium consumers pay for certain country of origin claims made on the labels of olive oil products. Academics have used both hedonic regression and conjoint analysis to address the question of whether premiums for country of origin claims exist. Indeed the economic literature suggests that consumers do in fact pay a premium for olive oils, especially when they are labeled as being from Italy.

9. For example, one study analyzes prices of olive oils available from Portuguese retail chains using hedonic regression.<sup>7</sup> The authors' study indicates that consumers shopping at Portuguese grocery retailers paid approximately a 23% to 30% premium for olive oils from geographic regions that have a reputation for quality olive oils, depending on the region. Additionally, the authors remark that "where it is not possible to distinguish objectively between products on the basis of intrinsic quality, consumers will resort to the use of the region of origin cue as a surrogate quality index"; exactly the type of hypothesis I propose to test in this litigation.<sup>8</sup> The hedonic regression specification used in this study controlled for brand, size of

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<sup>5</sup> The Complaint.

<sup>6</sup> Case, Fair & Oster, *Principles of Microeconomics*, 9th Edition, 2009, at 305-316, 449.

<sup>7</sup> *Product Attribute Saliency and Region of Origin: Some Empirical Evidence from Portugal*. Santos, Freitas J. and Ribeiro, Cadima J., Paper prepared for presentation at the 99th seminar of the EAAE (European Association of Agricultural Economists), 'The Future of Rural Europe in the Global Agri-Food System', Copenhagen, Denmark, August 24-27, 2005.

<sup>8</sup> *Id.*, at 9.

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container, and category of olive oil products in order to isolate the distinct price premiums from different regions of origin.

10. Another study which tested whether consumers pay a price premium for olive oils claiming to be produced in a specific country used conjoint analysis and surveyed consumers in Toronto.<sup>9</sup> The authors administered a conjoint survey of extra virgin olive oil products with various attributes to participants in order to understand their preferences for olive oils from "Italy," "Greece," "Spain," and other geographic regions. The authors' findings indicate that consumers prefer Italian olives oils over Spanish or Greek oils, consumers are likely to pay substantial premium for Italian olive oils, and that "consumers [do] not prefer Greek over Spanish or vice versa."<sup>10</sup> Furthermore, their findings also indicate that Canadian consumers pay significantly less attention to more granular geographic information, such as the region within a country where an oil is produced, than to the country of origin claim.

11. Other studies have used hedonic regression and conjoint analysis to estimate premiums for other attributes of olive oil besides country of origin indications. It appears that olive oil is an excellent candidate for both hedonic regression and conjoint analysis because it is a relatively simple differentiated product with attributes that can be controlled for easily.

12. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>9</sup> *Consumers' Preferences for Geographical Origin Labels: Evidence from the Canadian Olive Oil Market*. Menapace, Luisa, *et al*, European Review of Agricultural Economics 38(2) (2011):193–212.

<sup>10</sup> *Id.*, at 206.

<sup>11</sup> Bates No. SNA-0008691 *et seq.*, at SNA-0008703.

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13. [REDACTED]

[REDACTED]

[REDACTED]

14. [REDACTED]

[REDACTED]

15. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

16. [REDACTED]

[REDACTED]

[REDACTED]

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<sup>12</sup> *Id.*, at SNA-0008707, SNA-0008709.

<sup>13</sup> Bates No. SNA-0005697 *et seq.*, at SNA-0005700.

<sup>14</sup> *Id.*

<sup>15</sup> [REDACTED]

<sup>16</sup> Bates No. SNA-0011094 *et seq.*, at SNA-0011097, SNA-0011127.

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#### **IV. FRAMEWORK FOR DAMAGES**

17. As a threshold matter, it is my opinion that it is possible to determine class-wide damages in this case using the Defendant's own available business records, third party records and industry resources.

18. Below, I propose the use of hedonic regression to calculate Price Premium Damages<sup>17</sup> (wherein consumers would receive the difference between the value (purchase price) of the Products and value of the Products had the Claim not been made).

#### **V. CALCULATION OF THE PRICE PREMIUM: REGRESSION ANALYSIS**

19. In this litigation, price premium damages for the Class are the difference between the market price of the Products and the market price that would exist but for Defendant's misrepresentation.

20. A method that can reliably isolate that difference in price is the econometric technique referred to as regression analysis. A regression analysis is an econometric tool commonly used by economists. A regression analysis identifies and quantifies the relationship between two or more variables. A regression analysis is used to identify the variation in the so-called "dependent variable" (such as the price of an olive oil) through its relationship with one or more "independent" or "explanatory" variables (such as, e.g., the Claim or the brand).<sup>18</sup> A regression analysis can identify both whether a particular effect is present (such as to confirm

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<sup>17</sup> As used throughout this declaration, the term "Price Premium Damages" is used to indicate the additional amount that consumers paid for the Products as a direct result of the Claim only, and not the overall premium that the Products may command in the marketplace vis-a-vis competitor products. Indeed, a product may still carry a price premium for a product attribute despite having a lower total retail price than other products in the marketplace.

<sup>18</sup> An error term, also called the "disturbance" term, captures the effects of chance events, unmeasured variables, and other residuals as calculated by the regression model.

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that the Claim does increase the price of the Products) and the overall amount of such an effect (by how much does the Claim increase the cost of the Products).

21. Hedonic regression is an application of standard regression techniques that measure the value of various product attributes. Hedonic regression is based on the concept that each product attribute has a different and measurable impact on aggregate consumer utility.

22. First detailed by Rosen in 1974,<sup>19</sup> hedonic regression is now widely used by economists. Indeed, there are numerous studies that apply the hedonic regression technique to myriad consumer products and the practice has been adopted by statistical agencies with a focus on measuring consumer prices (e.g., the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor Statistics).<sup>20</sup>

23. Hedonic regression also has a long history in use for determining damages in class action litigation.

We have proposed the use of hedonic regression analysis as a tool to assist the courts in dealing with the difficult procedural decisions involved in these certification proceedings. Our proposed use of hedonic analysis fundamentally links class certification to the estimation of damages. In our application, we have used hedonic analysis to help certify class *specifically* by estimating the uniform and common damage caused to plaintiffs by the tortious behavior of defendant.<sup>21</sup>

24. Recently, various courts (including federal courts in New York and California) have found that hedonic regression analysis is a suitable method for determining class-wide damages

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<sup>19</sup> *Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition*. Rosen, Sherwin, *The Journal of Political Economy*, Vol. 82, No. 1. (Jan. - Feb., 1974) ("Rosen").

<sup>20</sup> The use of hedonic regression in individual studies is too widespread to exhaustively document in detail. *See, e.g., The Expanding Role of Hedonic Methods in the Official Statistics of the United States*, Moulton, Brent R., Bureau of Economic Analysis, U.S. Department of Commerce, June 2001.

<sup>21</sup> *The Use of Hedonic Analysis for Certification and Damage Calculations in Class Action Complaints*, Doane, Michael (Analysis Group) and Hartman, Raymond, *Journal of Law, Economics, & Organization*, Vol. 3, No. 2 (Autumn, 1987), pp. 351-372. [Emphasis original]



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(and specifically price premium damages) in consumer class action lawsuits.<sup>22</sup> I have conducted hedonic regressions numerous times in these and other cases.

25. The hedonic regression analysis is conducted using actual aggregated pricing and product attribute information. As explained in greater detail below, hedonic regression does not require individual analysis to provide a class-wide result. This is a mechanical truth as to how the technique works.

26. The hedonic regression function can be expressed as:

$$P_i(Z) = P_i(Z_1, Z_2, \dots Z_N)$$

In this function, P is the Price of product "i", each Z factor is a product attribute variable. Each product attribute Z factor can have either a positive, negative, or null effect on the total Price, P. This model can be used to determine the value of the specific attributes of various products.

27. In this litigation, the hedonic regression can be specified to separate out the prices that consumers pay for each of the Product attributes (e.g., the Claim).

28. The regression can be calculated in a variety of forms, including "linear" and "semi-log."

29. In a linear format, the regression will calculate the dollar component amount of each product attribute (the value of each attribute as expressed in dollars and cents).

30. In the semi-log format, the use of natural logarithms<sup>23</sup> allows the regression to calculate a percentage price increase or discount for each product attribute (the value of each attribute is expressed as a percentage of the price).

31. One example model specification would be:

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<sup>22</sup> See, e.g., *In re: Scotts EZ Seed Litigation*, Case No. 12-cv-4727-VB, Dkt No. 127 (S.D.N.Y. January 26, 2015); *In re: ConAgra Foods Inc.*, Case No. 11-cv-05379-MMM, Dkt No 545 (C.D. Cal February 23, 2015); *Dei Rossi vs. Whirlpool*, Case No. 12-cv-00125-TLN, Dkt No. 160 (E.D. Cal April 28, 2015).

<sup>23</sup> The logarithm of a number is the exponent to which another fixed value, the base, must be raised to produce that number. This expression is often notated as  $\log_{base}(x)$ . The natural logarithm has the number  $e$  (approx. 2.718) as its base. Natural logarithms are often notated without reference to the base as  $\ln(x)$ .

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$$\log P(\text{Berio}) = \sum_{n=1}^N (\beta_n * z_n) + \varepsilon$$

where  $\log P(\text{Berio})$  is the natural log of the price of the Product or Products. Beta,  $\beta$ , is the coefficient for the vector  $z$ ,  $z_{nt}$  is a vector representing the bundle of product attributes being measured, and  $\varepsilon$  is the error term.

### **A review of sample literature**

32. Hedonic regression is routinely used to calculate the value of individual product attributes. The hedonic regression model has been used to evaluate pricing in many different types of markets, but there is particularly extensive literature on this method in consumer product mass markets—the stated marketplace for the Products at issue in this litigation.

33. Any variety of attributes can be studied, ranging from time/seasonality, geo-location/regional differences, brand, and product-specific attributes. These attributes span things such as package size or the Claim at issue in this litigation. While too voluminous to document exhaustively here, there is a wealth of studies that confirm the ability of hedonic regression to determine the market value of product attributes.

34. For example, U.S. Bureau of Labor Statistics ("BLS") published an article that uses the hedonic regression technique specifically on refrigerators for use in enhancing the calculation of the U.S. CPI.<sup>24</sup> In the study, the BLS examines the price premiums associated with various product attributes (such as brand, whether the refrigerator had an ice maker, color/finish, etc.) in an effort to improve the CPI by adjusting the index for such attribute premiums.

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<sup>24</sup> *Developing a Hedonic Regression Model For Refrigerators in the U.S. CPI*, Shepler, Nicole, October 16, 2001, available at <http://data.bls.gov/cgi-bin/print.pl/cpi/cpirfr.htm> (last accessed February 24, 2015).

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35. Another example is a study of the yogurt market that shows that various production standard claims all produce positive, statistically significant price premiums associated with labeling claims such as "organic," "all natural" or "natural."<sup>25</sup>

36. Another study used hedonic regression to examine the attributes of retail eggs to determine whether "organic feeding" labeling had a positive price premium effect on the retail price of eggs.<sup>26</sup>

37. Another hedonic regression study examines the impact of "organic" labeling on Breakfast Foods. "Organic" was found to have a significant positive effect on the retail price of Breakfast Bars, Granola and Hot Cereals.<sup>27</sup>

38. Another study used hedonic regression to evaluate how consumers value nutrients in breakfast cereals including vitamins, fiber, and sodium. Results showed that vitamin content had a positive impact on the price of cereals.<sup>28</sup>

### **Use of hedonic regression in this litigation**

39. Hedonic regression is an ideal technique for calculating the price difference between the value of the Products with and without the Claim.

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<sup>25</sup> *Organic and All Natural: Do Consumers Know the Difference?* Anstine, Jeffrey, *Journal of Applied Economics and Policy* 26.1 (2007):15-27.

<sup>26</sup> *Hedonic Analysis of Retail Egg Prices*, Karipidis, Philippos I., *et al*, *Journal of Food Distribution Research* 36.3 (2005).

<sup>27</sup> *The Value to Consumers of Health Labeling Statements on Breakfast Foods and Cereals*, Muth, Mary K., *et al* Contributed Paper prepared for presentation at the International Association of Agricultural Economists Conference, Beijing, China, August 2009, on behalf of RTI International and Food and Drug Administration, Center for Food Safety and Applied Nutrition. 10 March 2014.  
[http://ageconsearch.umn.edu/bitstream/50333/2/Manuscript\\_Value\\_of\\_Labeling\\_Statements\\_IAAE%20174.pdf](http://ageconsearch.umn.edu/bitstream/50333/2/Manuscript_Value_of_Labeling_Statements_IAAE%20174.pdf)

<sup>28</sup> *Hedonic Prices for a Nondurable Good: The Case of Breakfast Cereals*. Stanley, L. R. and John T. Tschirhart, *Review of Economics and Statistics* 73.3 (1991):537-541.

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40. The time periods, geographies, and relevant product attributes are easily identifiable and determinable in this litigation. Certain attributes that I would include from the outset would be:

- brand;
- size;
- packaging;
- promotional pricing;
- flavor/scent;
- additives (e.g., natural or organic);
- olive oil category (e.g., Extra Virign);
- geography claim.

41. The process of hedonic regression is iterative. It would be extremely rare for an economist to pull together a proposed list of attributes, assemble a data set, run one single regression, and declare the results as final. Instead, multiple regressions are run to help determine the best regression specification before finalizing the results. The identification of explanatory variables is an ongoing process that starts with economic theory, then involves collecting and reviewing data, and analyzing the data to make an empirical determination about the use of the variable. Sometimes a variable may seem relevant theoretically, but may later be discovered to not be proper for inclusion in the model, and vice versa.

### **Statistical evaluations of a regression model**

42. Hedonic regression (as with any regression) produces statistical measures, such as the R-squared statistic, the F-statistic, and T-statistic, all of which can be used to evaluate the reliability of the results of the study. These measures are objective, mathematical calculations produced mechanically by statistical software packages. Questions about the reliability or

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explanatory power of these models can be answered by examining these and other measures of reliability.

43. The R-squared and adjusted R-squared are widely-recognized and accepted indicators of the explanatory power of a regression model. The R-squared essentially identifies the percent of the variation in the dependent variable that can be explained by the independent variables.

44. Another commonly used and widely-recognized measure of the explanatory power of a model is the F-statistic. The F-statistic helps to determine the overall "goodness of fit" of the model. It is a statistic one might examine to see whether you are getting appropriate results and whether the model makes statistical sense.

45. The T-statistic is yet another objective measure of the reliability of the results of a statistical model. Each explanatory variable will produce a result from the model—a "coefficient"—along with a T-statistic to evaluate whether the result is statistically significant.<sup>29</sup> It gives the economist guidance that the coefficient is meaningful in a statistical sense.

### **The available data**

46. The data necessary to conduct a hedonic regression analysis and damage calculation in this litigation are available, or will become available. Such data come from one of several sources: Defendant's own business records (e.g., pricing data, product attributes, sales volumes); third party competitors (e.g., labels); or industry resources and independent market research (e.g., pricing and product attribute information from IRI/Nielsen).

47. I have been provided with myriad sales data, as described below.

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<sup>29</sup> T-statistics can be calculated in a "standard" form (which relies upon certain assumptions about the underlying data, and can overstate the t-statistics if those assumptions do not hold) and "robust" form (which does not rely on these assumptions, and instead uses calculation methods that are not sensitive to whether those assumptions are invalid in some particular ways).

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48. I have been provided with the wholesale units sold of the Products during the relevant period.<sup>30</sup>

49. At my direction, Counsel for Plaintiffs has subpoenaed, and obtained sales data from IRI.<sup>31</sup> This data set contains weekly sales data of olive oil products, including from January 2009 through May 2015, for the state of California. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

50. [REDACTED]

[REDACTED]<sup>32</sup>

51. I have also obtained label information for the top selling brands in the olive oil market in California.

52. I understand that Counsel for Plaintiff has also subpoenaed label data from additional third parties.<sup>33</sup> To date, I have received historic label data from Pompeian, Goya, CA Olive Ranch, Lucini, and Mazola, and have integrated such data into the regression. As additional data becomes available, it will be possible to update the data set and regression.

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<sup>30</sup> Bates No. SNA-0030646, SNA-0030647, SNA-0030648, SNA-0030649, SNA-0030650, SNA-0030651, SNA-0030652.

<sup>31</sup> See, e.g., IRI\_OliveOil\_0001.

<sup>32</sup> See, e.g., Deposition of Thomas Mueller October 21-22, 2015, at 298-306.

<sup>33</sup> Colavita, CA Olive Ranch, Lucini, Star, Borges USA, Pompeian, Sipa SRL, JM Smucker, Goya, Botticelli, Prods Espanoles, ACH Food Co., Axiom Ent LLC, and Vigo Imp Co.

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53. No individualized analyses, or Class-Member-specific inquiry will be required. All relevant data needed to complete the hedonic regression analysis is Class-wide, common evidence.

### **Data Preparation**

54. Prior to running a preliminary regression, I undertook several steps to prepare the data. The primary task was to integrate the IRI olive oil sales data with attribute information taken from product labels. Specifically, I obtained California IRI sales of olive oil products, identified the top selling products in the olive oil market in California, and obtained labels for these products from stores and online sources. After obtaining product labels, I generated a coded spreadsheet of the various geographic claims made by olive oil manufacturers on the front of their product labels<sup>34</sup> in addition to labeling information provided in by Defendant.

55. For purposes of this litigation, various geographic claims made by olive oil manufactures were similar enough to be grouped by country or region of origin. For example, one olive oil product makes the claim "Imported from Italy," while another product makes the claim "Product of Italy." Since the purpose of my analysis is to assess the premium consumers pay for products claiming to have been produced in Italy, all products which made similar claims

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<sup>34</sup> For purposes of this preliminary model (prior to the completion of discovery) I have been asked by counsel to assume the following: Some Filippo Berio products made an "Imported from Italy" claim from the beginning of the IRI data up until the end of quarter 2, 2015 at which point the products claimed to be "Imported," some labels of Pompeian and Omaggio products could be matched to IRI data based on their names rather their UPCs, some Pompeian products made the claim "Imported" based on inference from other Pompeian product labels, some Star products made no geography of origin claims based on inference from other Star product labels, one Star product made the claim "California" based on inference from other Star product labels, two California Olive Ranch products made the claim "California" based on inference from other California Olive Ranch product labels, each Bertolli product made an "Imported from Italy" claim for a certain range of time, each Carapelli product made an "Imported from Italy" claim for a certain range of time indicated by Defendant before which each product made no geography of origin claim, product claim start dates which were left blank in Interrogatory Responses provided by Defendant were assumed to begin at or before the beginning of the IRI sales data, and product claim end dates which were left blank in Interrogatory Responses provided by Defendant were assumed to continue up until the end of the IRI sales data. As discussed above, Counsel for Plaintiff has subpoenaed additional label data. Should additional data become available, I would anticipate including in the regression model. This may impact the final value of the calculation, but would not change the underlying model itself.

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about originating from Italy are categorized in the spreadsheet as "Italy" claims. In total the spreadsheet contains six different "Geography Claims": "Italy," "Spain," "Mediterranean," "California," "Imported" (without specific country of origin details), as well as "None" for products which made no country of origin claim on their front labels. Once this spreadsheet was complete, it was merged with the IRI data.

56. [REDACTED]

[REDACTED]

I converted the weekly IRI sales data into quarterly data.<sup>37</sup>

57. The IRI data contains information about each of the following attributes, which I coded as either a single variable or a set of categorical<sup>38</sup> (dummy)<sup>39</sup> variables: [REDACTED]

[REDACTED]

<sup>35</sup> Mueller Deposition; Deposition of David L. Scheiber, November 3, 2015. [REDACTED]

[REDACTED] Should additional data/information become available, it may impact the final value of the calculation, but would not change the underlying model.

<sup>36</sup> Hedonic regression is a flexible methodology, and, should ongoing discovery indicate alternative time frames, I can substitute any alternate information about label changes into the data set to obtain results.

<sup>37</sup> Baker, Jonathan B. and Timothy F. Bresnahan, *Economic Evidence in Antitrust: Defining Markets and Measuring Market Power*, Chapter 1 of Handbook of Antitrust Economics 2007, Cambridge: MIT Press, at 9.

<sup>38</sup> A single variable would be something like size, whereas a categorical variable would be something like brand, where each observation would have a separate variable indicating whether the Product was or was not each of the brands in the model.

<sup>39</sup> "Dummy" variable is a term of art in econometrics (and is not used in a pejorative sense), referring to a variable that takes the value 0 under one condition, or 1 in the alternate. The "Imported from Italy" Claim will be coded as a dummy variable, where each observation will be coded as 1 if the products makes an "Imported from Italy" Claim and 0 if it does not.



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*Brand*

58. After merging the label attributes with the IRI data, [REDACTED]

[REDACTED]<sup>40</sup> To control for brand specific effects in the regression, I created a group of "Brand" dummy variables, which were included in the regression model.

[REDACTED]

59. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

60. IRI categorizes the olive oils used in my regression model as [REDACTED]

[REDACTED]

[REDACTED]

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<sup>40</sup> Mueller Deposition, at 308-315.

<sup>41</sup> Defendant's production of wholesale sales data and product labels. *See also*, Wang, S; Moscatello, B; and Flynn, D.; Survey: Consumer Attitudes on Olive Oil, UC Davis Olive Oil Center, May 2013.

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[REDACTED]

61. The IRI data includes information about [REDACTED]

[REDACTED]<sup>42</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

### **Hedonic Regression Results**

64. Because I have price, sales and attribute data for a wide range of olive oil products, including the Salov Products, hedonic regression is an ideal method for isolating the value of the Claim on the Products.

65. I have conducted a hedonic regression that confirms the existence of a price premium attributable to the "Imported from Italy" Claim. These results pertain to sales throughout California and all of the challenged Salov Products, across all sizes, and across

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<sup>42</sup> The IRI data contains other information in its [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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multiple years. Additional regressions could be run for different Class periods and/or geographic areas, and may be subject to refinement as new, different and/or additional data becomes available. My results confirm that the hedonic regression technique is capable of making such a determination in this case.

66. I conducted my analysis using Stata.<sup>43</sup> Stata is commercially available (for sale) to all researchers who conduct statistical analysis, and is widely used in the profession: "Stata is distributed in more than 200 countries and is used by hundreds of thousands of professional researchers in many fields of research."<sup>44</sup> Stata has been used numerous times to conduct regression analysis in litigation damages contexts.<sup>45</sup>

67. The dependent variable is the log price per unit ounce.

68. I have analyzed several product attributes and control variables as potential explanatory variables of price in this hedonic regression of the prices in the IRI data.

69. As noted above, the dataset contains California price, unit sales, and attribute (including geographic) data for the olive oil products category, including data on the sales of the Salov Products, for the period January 2009 through May 2015.

70. I use an array of independent/explanatory variables from this data set in this regression including: the "Imported from Italy" Claim, olive oil category, brand, size of the container sold, packaging of the product (metal vs. plastic), cholesterol, natural/organic, and seasonality/time period.

71. After organizing the data, I tested several different specifications of the regression model using the natural log of price per unit ounce as the dependent variable. Each regression

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<sup>43</sup> <http://www.stata.com/products/>

<sup>44</sup> <http://www.stata.com/why-use-stata/>

<sup>45</sup> See, e.g., *In re: Cellphone Termination Fee Cases*, Ramzy Ayyad, et al, Plaintiff, v. Sprint Spectrum, L.P., Defendant, JCCP No. 4332, Case No. RG03-121510; *In re: ConAgra Foods Inc.*, Case No. 11-cv-05379-MMM, Dkt No 545 (C.D. Cal February 23, 2015).

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specification was run using only data from the relevant Class Period for each Claim, and had similar, robust results. The stability of the results across different model specifications, as well as high level diagnostic statistics of the final and preferred model, give me confidence that this preliminary analysis is robust and reliable for purposes of demonstrating that this method can be used to calculate Price Premium Damages on a classwide basis.

72. In order to account for various combinations of "Geography Claims" and "Olive Oil Categories" advertised on the front of olive oil labels, the regression specification I chose includes interaction terms between these two sets of attributes. Interaction terms allow an econometrician more flexibility when specifying a regression model and allows for testing of more specific hypotheses. Interaction terms are created by simply multiplying two variables together and including them in a regression as a joint effect.<sup>46</sup> For example, in this litigation, adding the variable "Italy"  $\times$  "Extra Virgin" to a regression model which already controls for both "Italy" and "Extra Virgin" allows the model to isolate the premium attributable to an olive oil which is labeled "Extra Virgin" *and* isolate the premium attributable to an olive oil which is labeled both "Italy" and "Extra Virgin"

73. The preliminary model produced robust results. I have reproduced the R-Squared, F-statistic, and independent variable information (including the T-statistic) for the Claim, as well as the associated Price Premiums and Premium Factors<sup>47</sup> in Table 1. The complete results of the model are reproduced in Exhibit 3.

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<sup>46</sup> Stock, J. H. & W. W. Watson, Introduction to Econometrics (3rd ed.), Boston: Addison-Wesley, 2011 ("Stock & Watson"), at 274-278.

<sup>47</sup> To interpret a coefficient in this log-linear regression, it must first be exponentiated to undo the log transformation. This is done by taking the mathematical constant  $e$  (roughly 2.71828), and raising it to the exponent of the coefficient, and then subtracting 1 from the result. This result can then be interpreted as the percentage price premium or discount for that attribute, when all other attributes are held constant. When interpreting the effects of more than one coefficient at a time, one must understand that the model coefficients in total are relative to a base price without any attributes at all. The price premium calculated here is the extra amount consumers would have paid above a base amount had the claim not been made. The actual available sales data in this case are sales dollars that occurred *with* the claim. To determine damages, you need the corresponding price premium factor, which is calculated as, e.g.  $[premium] \div [1 + premium] = .1877 \div 1.1877 = .1580$  or 15.80%.

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Table 1.				
Summary Preliminary Hedonic Regression Results				
Premium Type	Claim Coefficient	Claim T-Statistic	Claim Price Premium <sup>47</sup>	Claim Price Premium Factor <sup>47</sup>
Extra Virgin/Italy (vs. Extra Virgin/Non-Italy)	0.03458206	2.06	██████	██████
Extra Light/Italy (vs. Extra Light/Non-Italy)	0.07476452	2.70	██████	██████
Olive Oil/Italy (vs. Olive Oil/Non-Italy)	0.16522372	6.23	██████	██████
F-statistic =432.96, Adjusted R-squared = .780				

74. The price premiums can be interpreted as follows:

- An olive oil labeled both "Extra Virgin" and "Imported from Italy" carries an approximately █████ price premium on a price per unit ounce basis over an "Extra Virgin" olive oil with no claim about its geography of origin.
- An olive oil labeled both "Extra Light" and "Imported from Italy" carries a █████ premium on a price per unit ounce basis over an "Extra Light" olive oil with no claim about its geography of origin.
- An olive oil labeled both "Olive Oil" and "Imported from Italy" carries a █████ price premium on a price per unit ounce basis over a standard olive oil with no claim its geography of origin.

75. As can be seen in the table, the model produced relatively high adjusted R-Squared values, indicating that the model is explaining 78% of the variation of the dependent variable. The F-Statistics also confirm that the model has strong explanatory power.

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76. The consistently positive coefficient for the Claim indicates that consumers place a high value on the "Imported from Italy" Claim, and that market wide, there is a substantial price premium attributable to this Claim. The T-Statistics for the Claim coefficient indicates that the results are all statistically significantly different from zero at the 95-99% confidence level.

## **VI. TOTAL SALES OF THE PRODUCTS**

77. Total Dollar Sales of the Salov Products were calculated from the IRI through-the-register sales data as the basis for the total sales of the Salov Products For the time period covered by the IRI data, I have used the IRI sales data directly. For time periods beyond the available IRI data, I forecasted Dollar Sales of the Products using the IRI sales data and a simple linear regression trend. If a particular oil appeared to have stopped selling during the last few months of the time covered by the IRI data, then I did not forecast sales for those particular products. I then summed the Total Dollar Sales of Products associated with the Claim. For the "Imported From Italy" Class, I summed the Total Dollar Sales of the Products during the period May 23, 2010 to August 31, 2015.<sup>48</sup>

78. I have summarized the sales of the Salov Products below in Table 2.

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<sup>48</sup> I was asked to assume an class period end date of August 31, 2015.

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Table 2.	
California Retail Sales of the Salov Products	
Salov Product	California Retail Sales
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ - 0000001845751	
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 16.9 OZ - 0041736000271	
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 50.7 OZ - 0041736000281	
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 25.3 OZ - 0041736001601	
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 34 OZ - 0041736001702	
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 16.9 OZ - 0041736001801	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 101.4 OZ - 0041736010114	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 34 OZ - 0041736010121	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 25.3 OZ - 0041736010131	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ - 0041736010141	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 8.4 OZ - 0041736010161	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ - 0041736010271	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 50.7 OZ - 0041736010281	
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 34 OZ - 0041736030121	
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 25.3 OZ - 0041736030131	
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 16.9 OZ - 0041736030141	
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 17 OZ - 0041736030271	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ - 0041736040141	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN ROBUSTO 16.9 OZ - 0041736050141	
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN DELICATO 16.9 OZ - 0041736060141	
TOTAL	

## VII. CALCULATION OF PRICE PREMIUM

### DAMAGES

79. Calculating regression price premium damages in this litigation is simple and straightforward.

80. With the price difference due to the Claim determined on a percentage basis, the calculation of Class-wide damages for any Product will be:

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$$\%Price\ Premium\ Factor: Claim \times \$Units\ Sold = Damages$$

81. These calculations can be performed on a Class-wide basis, for any defined time period, including the Class Period(s) in this litigation, and/or geographic location.

82. I have summarized the results of these calculations in Table 3 below.

Table 3.			
Preliminary Damages Estimate			
Salov Product	California Retail Sales	Price Premium Factor	Damages
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 50.7 OZ			
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 25.3 OZ			
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 34 OZ			
FILIPPO BERIO OLIVE OIL 100% PURE REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 101.4 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 34 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 25.3 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 8.4 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 50.7 OZ			
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 34 OZ			
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 25.3 OZ			
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA LIGHT REGULAR 17 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN REGULAR 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN ROBUSTO 16.9 OZ			
FILIPPO BERIO OLIVE OIL EXTRA VIRGIN DELICATO 16.9 OZ			
TOTAL			



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## **VIII. INDIVIDUAL INQUIRY IS NOT REQUIRED**

### **Variations in purchase price do not alter the calculation of total, class-wide damages**

83. Variations in purchase price do not prevent the calculation of Class-wide damages. Such variations in price are captured in the IRI actual sales data used for analysis, and analyzed by the hedonic regression model. Such variations are also inapposite to the calculation of class-wide damages, because the ultimate distribution or allocation of damages to individuals during claims administration or a settlement does not alter the calculation of total, class-wide damages.

84. Class-wide damages under a price premium model can be calculated from the bottom up as the sum of individual damages (as defendants often assert), or can be calculated from the top down, without individual inquiry, by finding the percentage price difference resulting from the Claim and then multiplying it by the number of units or dollars sold. As outlined above, I propose to use the latter technique, obviating the need for individual inquiry.

85. Ultimately, no matter the method by which damages are distributed, it does not affect the calculation of, or the total amount of class-wide damages in this litigation.

### **Individual interpretation of the Claim is irrelevant to the determination of class-wide damages**

86. Individual interpretation of the Claim is irrelevant to the determination of Class-wide price premium damages here. Individual interpretations of the Claim do not change the price paid by that individual. As such, we are dealing with a simple but-for question: What did the Class pay for the Products with the Claim, and what would they have paid had the Claim not been made?

87. Calculating a but-for price premium does not depend on an individual interpretation of the Claim because there is no middle ground. If the market price for the Products was higher

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as a result of the Claim, then ALL consumers will have paid a higher price than if the Claim had not been made, regardless of their personal interpretations.

**Individual behavior or use of the Products is irrelevant to the determination of class-wide damages**

88. Calculating a but-for price premium does not depend on individual behaviors or uses of the Products. As I have discussed at length, if the market price for the Products was higher as a result of the Claim, then ALL consumers will have paid a higher price than if the claim had not been made.

**Individual reasons for purchase do not change the price, or price premium paid by an individual**

89. Individual reasons for purchase are irrelevant in this case, because a consumer's individual reasons for purchase do not change the price paid by that individual. Individual consumers do not negotiate the price of the Products at retail. Shelf prices do not adjust themselves for individual consumers.

90. As I have discussed above, if there is a price premium included in the price of the Products as a result of the Claim and consumers buy the Product, they will pay that premium regardless of their reasons for purchase, because their individual reasons for purchase do not change the price they will pay.

91. Even if a consumer bought a unit of the Products with the intention to immediately throw that Product in the garbage, the consumer has been harmed because he paid more for the Products than he would have but for the Claim.

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### **IX. RESERVATION OF RIGHTS**

My testimony is based upon the information and data presently available to me. Additional, different and/or updated data including market research data may be obtained in advance of trial. I therefore reserve the right to amend or modify my testimony.

### **VERIFICATION**

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief, and that this declaration was executed at Boston, Massachusetts, this 19th day of January, 2016.

A handwritten signature in dark ink, appearing to read 'C. B. Weir', is written over a horizontal line.

Colin B. Weir